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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

FUEL CELL FLOODING DETECTION

Attachment to Advisory Action

1. The amendments filed on March 24, 2010 was received. Claims 1 and 4 are pending.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. The rejection of claims 1 and 4 under 35 U.S.C. 102(b) as being anticipated by DiPierno Bosco et al. (US 6,103,409) would be withdrawn because claim 1 was amended.

4. Amended claim 1 would be rejected under 35 U.S.C. 103(a) as being unpatentable over DiPierno Bosco et al. (US 6,103,409) in view of Eryurek et al. (US 6,539,267).

The instant claims are to a product, a fuel cell stack and not to a process of operating a fuel cell stack. The claims include intended use limitations and process steps. For example, the limitation, "for determining a root-mean-square value from said set of differential pressure signals" is an intended use of the controller. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use; then it meets the claim.

The limitation, "a differential pressure transducer repeatedly measuring a differential pressure across said flow field and generating a set of differential pressure signals" is a process step for using the transducer. The use of the claimed controller and the steps performed by the claimed controller provide

structure to the invention by showing that these structural features are connected, but do not limit the product claim with respect to the use. The controller only need be capable of performing the steps to read upon the claim.

Regarding claim 1, DiPierno Bosco teaches a fuel cell stack comprising a fuel cell having an inlet, a flow field in fluid communication with said inlet and an outlet in fluid communication with said flow field (see figure 1 and col. 3, line 65 to col. 5, line 37); a vaporized water source in fluid communication with said inlet (col. 1, lines 48-65; col. 2, lines 14-end); a differential pressure transducer for measuring a differential pressure across said flow field and generating a set of differential pressure signals (paragraph bridging cols. 4-5); and a controller in communication with said differential pressure transducer, said controller having executable logic for determining a differential pressure fluctuation parameter from said set of differential pressure signals and control circuitry for controlling said vaporized water source in response to said differential pressure fluctuation parameter (col. 5, line 1 to col. 6, line 25.) Computers, microprocessors and logic are disclosed. The microprocessor includes a common digital computer with ROM, RAM, EPROM, instructions, algorithms, data manipulation and may be fitted with the Microsoft Windows systems (col. 5, lines 35).

DiPierno Bosco does not expressly teach that the computer includes a collection of the set to differential pressure signals measured during operation of the fuel cell; or, that the controller determines a differential pressure fluctuation parameter as a representative statistical value as a root-mean-square value from said set of differential pressure signals and controlling said vaporized water source in response to the root-mean-square value.

However, as discussed above, DiPerno Bosco does teach that its stack includes computers, microprocessors and logic and that microprocessor includes a common digital computer with ROM, RAM, EPROM. Further, Eryurek et al. (US 6,539,267) teaches a process system for determining a statistical parameter related to a process which can be used in dynamic statistical process control systems

(abstract, claim 1, col. 3, line 1 to col. 5, line 20; col. 5, lines 28-53; col. 8, lines 1-55.) The device includes a sensor providing output related to the process including a pressure sensor (claims 6-7), input and output circuitry, and computing circuitry (claims 1-6.) The statistical parameter may be the root-mean-square of the input (claim 4.) The controller is used to process variables that are typically used in a control process (col. 2, lines 30-end).

It would have been obvious to one of ordinary skill in the art at the time of the invention for the controller to determine the differential pressure fluctuation parameter as a representative statistical value as a root-mean-square value from said set of differential pressure signals as taught by Eryurek, and control said vaporized water source as taught by DiPierno Bosco, in response to the root-mean-square value. Such a controller will allow for the accurate control of the device (Eryurek, col. 4, lines 1-67), and have increased sensitivity and control monitoring deficiencies such as drift, bias and noise (Eryurek, col. 6, lines 10-60.)

Further, as to the computer comprising a collection of differential pressure signals measured during operation of the cell, Eryurek teaches that a number of data points obtained during a sample period are used to calculate the a root-mean-square value (col. 4, line 55 to col. 5, line 20). Thus, it would have been obvious to use the computer of DiPierno Bosco, as modified by Eryurek, to store the differential pressure signals measured during operation of the fuel cell because Eryurek teaches that a number of data points obtained during process operation are utilized in the calculation of a root-mean-square value.

Response to Arguments

5. Applicants' arguments filed October 14, 2009 have been fully considered but they are not persuasive.

6. As to applicants' arguments with respect to the DiPierno reference as presented on p. 4-6 of its remarks, the 35 U.S.C. 102(b) rejection, and single reference 103(a) rejection, using the DiPierno reference, as presented in the previous Office Action, are withdrawn in light of amendments made by applicants.

7. As to applicants' arguments with respect to the Eryurek reference (see p. 6 of its remarks), Eryurek teaches that its logical block compares statistical parameters, calculated during operation of the process, to trained values (and a sensitivity parameter) (col. 5, line 1 to col. 6, line 2). The reference also teaches that the trained values are adjusted dynamically (col. 5, line 43 to col. 5, line 53). Thus, applicant's contentions with respect to an a priori collection of data is unpersuasive. (Further, applicant is directed to the possible rejection of amended claim 1 as presented above.)

8. As to applicants' argument with respect to unexpected results (see p. 5-6 of its remarks and the Declaration filed on March 24, 2010), it is noted the rejection of arguments and declaration presented by applicant address the DiPierno Bosco reference in isolation, rather than addressing the fuel cell stack taught by the combination of the DiPierno Bosco and Eruyrek references, as discussed above. Further, assertions made by applicant in its declaration (i.e., attaining steady state one the order of 100 seconds or less (see Paragraph 4), etc.) are not recited in the claims; thus, the declaration is not commensurate in scope with the claims as presented.